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Wine yeast 20317
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COMPLETE SPECIFICATION.

RECORDED

Improvements in the Manufacture of Malt Liquor.

We ADOLF KERSCHBAUM, of Budweis, Bohemia in the Empire of Austria, Brewery Manager; and FRANZ JOSEF ZWICK, BOHNSLAV STRASSNICKY and RUDOLF SCHMEIDEL all of 29 Nussdorferstrasse Vienna in the Empire of Austria Gentlemen do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement:—

This invention relates to improvements in the production of malt liquor or malt wine from unhopped malt worts and consists chiefly in a novel method of producing the unhopped wort and in improvements in the process of fermenting the said wort as hereinafter described.

The improvement in the mashing process has for its principal object the production of a wort rich in maltose and dextrose and poor in dextrine in order to obviate the necessity for subsequently adding dextrose or saccharose to the product.

Malt contains two ferments namely one known as diastase and possessing the property of splitting up pasty starch (or starch in the condition in which it is found in malt) into maltose and dextrine the other ferment is termed "glycase" and possesses the property of converting maltose and dextrine into dextrose apparently also possessing the property of splitting up starch into dextrose and dextrine.

Consequently when glycase is present in the malt dextrose is formed in the mashing process in addition to maltose and dextrine. Glycase is not present in an active form in all kinds of malt and it has not heretofore been possible to ascertain how a malt of this description is to be produced with certainty but by analysing the wort we can ascertain the presence of dextrose in the wort and in this case may conclude that glycase was present in the malt.

In order to obtain a wort rich in maltose and dextrose and poor in dextrine according to our invention the saccharification is performed at a temperature at which the formation of dextrose resulting from the presence in the malt of the ferment known as glycase takes place with the greatest advantage. Whilst a saccharification at high temperature (about seventy degrees centigrade) leads to the formation of maltose the dextrose is more advantageously obtained at lower temperatures of saccharification (from about fifty to fifty seven degrees centigrade) and this principle forms the basis of the new mashing process in which barley malt or malt containing glycase is employed either alone or in combination with raw grain. A quantity of malt or malt and grain sufficient to obtain 10 grade wort is taken for the mashing and half the quantity is run off to be treated in the heater for a second brewing. It is soaked in a cold condition and after half an hour it is heated during the ensuing half hour with continual stirring or mashing to 50 degrees centigrade the mashing and refining vessel being provided with a steam jacket for this purpose.

At a temperature of about 50 degrees centigrade the saccharification is carried nearly to the conclusion (red reaction with iodine) and may be completed at this temperature but it is preferable to gradually raise the temperature to 70 degrees centigrade at which point the saccharification is perfectly completed and after settling the wort is directly clarified without boiling. The perfectly clear liquid or wort running off is then concentrated in a vacuum apparatus to the desired degree of concentration (or about 20 degrees Balling).

The treatment in the vacuum apparatus serves chiefly for the following purposes namely—

(1). To impart to the beverage a fine and pure flavour and ensure the pale golden yellow colour of the liquid.

[Price 8d.]

Kerschbaum, Zwick, Strassnicky, & Schmeidel's Manufacture of Malt Liquor.

(2). To reduce the cost of production as low as possible.
 The temperature of the prepared wort is lowered to 15 degrees centigrade whilst sterilized air is blown through it after which it is conducted into a closed fermenting vessel provided with an aerating arrangement. Fermentation is excited in this vessel by the addition of the corresponding quantity of pure wine yeast together with about 10 *per cent.* by volume of a fermenting vinous must (grape must).
 At the same time commences the introduction of air deprived of germs in order to maintain the fermentation being continued at first for from two or four hours and on the second and third days for four hours each day; after five days the principal fermentation (for which a temperature of from about 15 to 20 degrees centigrade must be maintained) is completed.

At the conclusion of the principal fermentation the fermented liquid is put into clearing vessels in the store cellar in which it remains until the clarification takes place whereupon it is drawn off from the froth or yeast and placed in storage vessels. After from about six to eight weeks the malt wine produced or manufactured in the manner hereinbefore described is ripe and may be employed either directly as a beverage or may be used in the manufacture of sparkling wines or of fine spirit or cognac or vinegar. It does not become deteriorated by keeping and is well adapted for exportation.

The manufacturing process hereinbefore described presents the following advantages namely.

1. The beverage obtained is of an agreeably acid vinous taste presenting a golden yellow colour and contains from about 6 to 10 *per cent.* by weight of alcohol according to the degree of concentration of the wort employed and also contains a residual percentage of extract corresponding to that of a middle class beer.
2. The beverage obtained as hereinbefore described is well adapted for general or popular consumption and all the bye products of the manufacture are capable of being advantageously utilized. These bye-products are of remarkable purity and consist of wash suitable for use in the manufacture of spirit and malt refuse suitable for cattle food.
3. The cost of manufacturing this beverage which combines the advantages of wine with those of ale is not greater than that of producing an ale of corresponding strength.

We are aware that wort has been evaporated in a vacuum apparatus and that the blowing in or injection of air has been employed in the manufacture of wort yeast and we do not claim these operations *per se*.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed we declare that what we claim is:—

1. In the manufacture of malt wine or liquor from unhopped malt wort the process for the production of a wort rich in maltose and dextrose but poor in dextrine (containing about 70 *per cent.* maltose 20 *per cent.* of dextrose and 10 *per cent.* of dextrine) from malt containing glycose (the said malt being employed either alone or in combination with unmalted or raw grain) by heating the mash to from about 50 to 57 degrees centigrade and carrying on the saccharification either entirely at this temperature or by raising the same to about 70 degrees centigrade at the conclusion substantially as hereinbefore described.
2. In the manufacture of malt wine or liquor as hereinbefore described and claimed the employment of a grape or vinous must in the fermenting process substantially as hereinbefore described.

Dated this 10th day of November 1892.

J. H. JOHNSON & Co.,
 Agents.